In the Claims

The following is a complete listing of claims and should replace all prior versions of the claims. Please cancel claims 9-15, 23-30, 45-63, 65-69, 78-87, 90-96, 109-112, 116, 117 and 121-149 as follows, and amend claims 1, 3, 4, 16-22, 31, 34-37, 39-42, 70, 89, 97, 104-106, 113, 118 and 119. Please add new claims 150-203.

1. (Currently Amended) An air monitoring system for monitoring indoor locations, comprising:

an air monitoring unit including at least one sensor for acquiring air quality parameter data at at least one indoor location; and

a computer including an expert system for controlling the air monitoring unit based at least in part on the acquired air quality parameter data, the expert system using at least a rule-based method to determine a decision for controlling the air monitoring unit.

2. (Previously presented) The air monitoring system of claim 1, wherein the expert system is adapted to analyze data from the air monitoring unit based at least in part on the acquired air quality data.

3. (Currently Amended) The air monitoring system of claim 1, further comprising:

a monitor for source of environmental data representative of the outside of a building in which at least one indoor location is being monitored;

wherein the expert system is adapted to provide an air quality analysis based at least in part on the acquired air quality data and the environmental data.

4. (Currently Amended) The air monitoring system of claim 1, wherein:

the expert system is adapted to configure a test to be performed by the air monitoring unit including at least the location of the test and or the time duration for the test.

5. (Original) The air monitoring system of claim 1, wherein the expert system is adapted to provide a recommendation for improving the air quality parameter data.

6. (Original) The air monitoring system of claim 1, wherein the unit is portable.

7. (Original) The air monitoring system of claim 1, wherein the expert system is provided within the air monitoring unit.

8. (Original) The air monitoring system of claim 1, wherein the air monitoring unit includes a program for acquiring the air quality parameter data and the expert system is adapted to modifying the program.

9-15. (Canceled)

16. (Currently Amended) An air monitoring system for monitoring indoor locations, comprising:

an air monitoring unit including at least one sensor for measuring air quality parameter data at at least one indoor location, and a computer for storing the data received from the at least one sensor;

a remote data center including,

a database for storing the air quality parameter data and receiving inputted characteristics, and

an expert system interactive with the air quality parameter data for analysis of the air quality parameter data, the expert system using at least one of a rule-based method, a case-based method, or a pattern recognition method using fuzzy reasoning over patterns to process the air quality parameter data in relation to certain inputted characteristics; and

a communication link between the remote data center and the air monitoring unit, the communication link including a data communication network that is adapted to handle communications between two or more other devices in addition to the communications between the remote data center and the air monitoring unit;

wherein the remote data center downloads sends information to the air monitoring unit through the communication link to modify the function of the air monitoring unit.

17. (Currently Amended) The air monitoring system of claim 16, wherein the expert system generates the information, and is adapted to ~~downloads~~ send the information to the air monitoring unit.

18. (Currently Amended) The air monitoring system of claim 16, wherein the expert system is adapted to ~~downloads~~ send information to the air monitoring unit to command the air monitoring unit to take a grab sample.

19. (Currently Amended) The air monitoring system of claim 16, wherein the air monitoring unit includes operational parameters, and the remote data center ~~expert system~~ is adapted to ~~downloads~~ send information to the unit to change the operational parameters.

20. (Currently Amended) The air monitoring system of claim 16, wherein the air monitoring unit includes a program to instruct the air monitoring unit in measuring air quality parameter data, and the remote data center ~~expert system~~ is adapted to ~~downloads~~ send information to the air monitoring unit to change the program.

21. (Currently Amended) The air monitoring system of claim 16, wherein the air monitoring unit includes a set-up parameter, and the remote data center ~~expert system~~ is adapted to change the set-up parameter in the air monitoring unit.

22. (Currently Amended) The air monitoring system of claim 16, wherein the communications link includes ~~an~~ the Internet.

23-30. (Canceled)

31. (Currently Amended) An air monitoring system for monitoring indoor locations, comprising:

an air monitoring unit including a grab sampler contained within the air monitoring unit for acquiring an air sample at at least one indoor location;

a remote control unit for controlling the air monitoring unit; and

a communications link between the remote control unit and the air monitoring unit, the communication link including a data communication network that is adapted to handle communications between two or more other devices in addition to the communications between the remote data center and the air monitoring unit;

wherein the remote control unit is adapted to downloads send a command using the communications link to the air monitoring unit to trigger the grab sampler to acquire an air sample.

32. (Original) The air monitoring unit of claim 31, wherein the grab sampler includes a sorbent tube.

33. (Original) The air monitoring unit of claim 31, wherein the grab sampler includes a container for holding a sample of air.

34. (Currently Amended) Apparatus for monitoring indoor locations, comprising:

an air monitoring system having at least one sensor for acquiring air quality parameter data at [[a]] at least one selected indoor location; and

a computer comprising an expert system for analyzing the acquired air quality data and reaching a conclusion regarding air quality of the selected indoor location, the expert system using at least a rule-based method to process the air quality parameter data.

35. (Currently Amended) Apparatus as defined in claim 34, wherein the computer comprising the expert system is a local part of the air monitoring system.

36. (Currently Amended) Apparatus as defined in claim 34, wherein the computer comprising the expert system is remotely located from said air monitoring system with

communications between the expert system and the air monitoring system that at least includes information related to the air quality parameter data acquired by the air monitoring system.

37. (Currently Amended) Apparatus as defined in claim 34, wherein said ~~means~~ expert system for analyzing the acquired air quality data ~~further comprises means for analyzing~~ additionally analyzes information representative of the selected indoor location in order to reach ~~in reaching~~ said conclusion.

38. (Original) Apparatus as defined in claim 34, wherein said expert system comprises two or more experts for determining intermediate results and an expert coordinator for combining said intermediate results to reach said conclusion.

39. (Currently Amended) Apparatus as defined in claim 34, wherein said expert system can make ~~includes means for making~~ a recommendation for improving the air quality of the selected indoor location.

40. (Currently Amended) Apparatus as defined in claim 34, wherein said expert system can control at least a portion of the ~~includes means for controlling~~ operations of said air monitoring system.

41. (Currently Amended) Apparatus as defined in claim 34, wherein said expert system can modify at least a portion of the ~~includes means for modifying~~ operation of the air monitoring system in response to the acquired sensor data.

42. (Currently Amended) Apparatus as defined in claim 34, wherein said air monitoring system further comprises an air sampling device and wherein said expert system can issue ~~includes means for issuing~~ a command to said air sampling device to acquire an air sample in response to the acquired sensor data meeting a predetermined criteria.

43. (Original) Apparatus as defined in claim 34, wherein said air monitoring system comprises a portable air monitoring unit that is easily movable to different selected indoor locations.

44. (Original) Apparatus as defined in claim 34, wherein said air monitoring system comprises an installed system for monitoring air quality in multiple indoor locations.

45-69. (Canceled)

70. (Currently Amended) An air quality monitoring system for monitoring indoor locations comprising:

at least one air quality sensor for acquiring sensor data at a selected indoor location;

a control unit for generating a grab sample command in response to the acquired sensor data meeting a predetermined criteria; and

a grab sample unit for acquiring an air sample at the selected indoor location in response to the grab sample command from the control unit.

71. (Original) An air quality monitoring system as defined in claim 70, wherein said control unit is located in proximity to the air quality sensor and the grab sample unit.

72. (Original) An air quality monitoring system as defined in claim 70, wherein said control unit is remotely located from the air quality sensor and the grab sample unit.

73. (Original) An air quality monitoring system as defined in claim 72, wherein the control unit communicates with the air quality sensor and the grab sample unit through the Internet.

74. (Original) An air quality monitoring system as defined in claim 70, wherein said grab sample unit includes a filter unit for removing particles from the air sample.

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75. (Original) An air quality monitoring system as defined in claim 70, wherein said grab sample unit comprise a sorbent material for removing gases from the air sample.

76. (Original) An air quality monitoring system as defined in claim 70, wherein said grab sample unit is configured for acquiring multiple air samples in response to multiple grab sample commands from said control unit.

77. (Original) An air quality monitoring system as defined in claim 70, wherein said control unit comprises an expert system for analyzing the acquired sensor data and generating the grab sample command.

78-87. (Canceled)

88. (Previously presented) The air monitoring system of claim 1 wherein expert system is used at least in part to detect anomalies in the air monitoring unit.

89. (Currently Amended) The air monitoring system of claim 1 wherein expert system is used at least in part to detect data that is tampered or faulty data.

90-96. (Canceled)

97. (Currently Amended) The air monitoring system of claim 31, wherein the communications link includes an the Internet.

98. (Previously presented) The air monitoring system of claim 31, wherein the communications link includes a local area network.

99. (Previously presented) The air monitoring system of claim 31, wherein the command from the remote control unit is initiated by manual control.

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100. (Previously presented) The air monitoring system of claim 31, wherein the command is initiated based on at least one of commands or input from another building system.

101. (Previously presented) The air monitoring system of claim 100, wherein the other building system is a fire alarm system.

102. (Previously presented) The air monitoring system of claim 100, wherein the other building system is a building control system.

103. (Previously presented) The air monitoring system of claim 100, wherein the other building system is a building ventilation system.

104. (Currently Amended) Apparatus as defined in claim 34, wherein the expert system operates at least on occupant symptom data from the ~~building~~ indoor location.

105. (Currently Amended) Apparatus as defined in claim 34, wherein the expert system operates at least on user supplied information about the ~~building~~ indoor location.

106. (Currently Amended) Apparatus as defined in claim 34, wherein the expert system operates at least on historical indoor air quality data in addition to current indoor air quality data from the ~~building~~ indoor location.

107. (Previously presented) Apparatus as defined in claim 34, wherein the expert system can learn or improve its effectiveness by accepting user feedback on the effectiveness of its conclusions.

108. (Previously presented) Apparatus as defined in claim 107, wherein data mining is used to assist the learning process.

109-112. (Canceled)

113. (Currently Amended) Apparatus as defined in claim 34, wherein the expert system uses two or more of rule, case, or pattern recognition based methods and ~~a means to~~ combines their results <u>to create an overall assessment of the air quality parameter data</u>.

114. (Previously presented) Apparatus as defined in claim 34, wherein the expert system uses blackboarding techniques to combine multiple expert system methods.

115. (Previously presented) Apparatus as defined in claim 114, wherein a web session is used as the expert system blackboard.

116-117. (Canceled)

118. (Currently Amended) An air quality monitoring system as defined in claim <u>75</u>~~74~~, wherein said grab sample unit is commanded based at least on data from a TVOC sensor.

119. (Currently Amended) An air quality monitoring system as defined in claim <u>74</u>~~75~~, wherein said grab sample unit is commanded based at least on data from a particle sensor.

120. (Previously presented) An air quality monitoring system as defined in claim 70, wherein said acquired sensor data includes data from at least two sensors.

121-149. (Canceled)

150. (New) The air monitoring system of claim 1, wherein the unit is an installed system.

151. (New) The air monitoring system of claim 3, wherein the source of environmental data is from at least one location outside the building for which the air monitoring unit acquired air quality or environmental data.

152. (New) An air monitoring system for monitoring indoor locations, comprising:

an air monitoring unit including at least one sensor for acquiring air quality parameter data at at least one indoor location; and

a computer including an expert system for controlling the air monitoring unit based at least in part on the acquired air quality parameter data, the expert system using at least a case-based method to determine a decision for controlling the air monitoring unit.

153. (New) The air monitoring system of claim 152, wherein the expert system is adapted to analyze data from the air monitoring unit based at least in part on the acquired air quality data.

154. (New) The air monitoring system of claim 152, wherein the expert system is adapted to provide a recommendation for improving the air quality parameter data.

155. (New) The air monitoring system of claim 152, wherein expert system is used at least in part to detect tampered or faulty data.

156. (New) An air monitoring system for monitoring indoor locations, comprising:

an air monitoring unit including at least one sensor for acquiring air quality parameter data at at least one indoor location; and

a computer including an expert system for controlling the air monitoring unit based at least in part on the acquired air quality parameter data, the expert system using at least a pattern recognition method using fuzzy reasoning over patterns to determine a decision for controlling the air monitoring unit.

157. (New) The air monitoring system of claim 156, wherein the expert system is adapted to analyze data from the air monitoring unit based at least in part on the acquired air quality data.

158. (New) The air monitoring system of claim 156, wherein the expert system is adapted to provide a recommendation for improving the air quality parameter data.

159. (New) The air monitoring system of claim 156, wherein expert system is used at least in part to detect tampered or faulty data.

160. (New) The air monitoring system of claim 16, wherein the remote data center is adapted to send information to the air monitoring unit to command the air monitoring unit to take a grab sample.

161. (New) The air monitoring system of claim 16, wherein the communications link includes a building's data network.

162. (New) The air monitoring system of claim 16, wherein the communications link includes a building control system network.

163. (New) The air monitoring system of claim 16, wherein the communications link includes a local area network.

164. (New) The air monitoring system of claim 16, wherein at least a portion of the communications between the remote data center and the air monitoring unit is encrypted.

165. (New) The air monitoring system of claim 31, wherein the communications link includes a building's data network.

166. (New) The air monitoring system of claim 31, wherein the communications link includes a building control system network.

167. (New) The air monitoring system of claim 31, wherein at least a portion of the communications between the remote control unit and the air monitoring unit is encrypted.

168. (New) The air monitoring system of claim 31, wherein the grab sampler includes a filter unit for removing particles from the air sample.

169. (New) Apparatus as defined in claim 34, wherein said expert system uses at least both a rule-based method and a case-based method to process the air quality parameter data.

170. (New) Apparatus as defined in claim 34, wherein said expert system uses at least both a rule-based method and a pattern recognition method using fuzzy reasoning over patterns to process the air quality parameter data.

171. (New) Apparatus as defined in claim 34, wherein said expert system uses at least both a case-based method and a pattern recognition method using fuzzy reasoning over patterns to process the air quality parameter data.

172. (New) Apparatus as defined in claim 34, wherein said expert system uses at least a case-based method, a rule-based method, and a pattern recognition method using fuzzy reasoning over patterns to process the air quality parameter data.

173. (New) Apparatus as defined in claim 34, further comprising:

a source of environmental data representative of the outside of a building in which at least one indoor location is being monitored;

wherein the expert system is adapted to provide an air quality analysis based at least in part on the acquired air quality parameter data and the environmental data.

174. (New) Apparatus as defined in claim 173, wherein the source of environmental data is from at least one location outside the building for which the air monitoring unit acquired air quality or environmental data.

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175. (New) Apparatus as defined in claim 34, wherein expert system is used at least in part to detect tampered or faulty data.

176. (New) Apparatus as defined in claim 34, wherein said air monitoring system has sensors for at least acquiring three different types of air quality parameter data.

177. (New) Apparatus as defined in claim 34, wherein said air monitoring system has at least a carbon dioxide sensor, a particle sensor, and a humidity sensor.

178. (New) Apparatus as defined in claim 34, wherein said air monitoring system has at least a carbon dioxide sensor and a TVOC sensor.

179. (New) The apparatus as defined in claim 36, wherein at least a portion of the communications between the remotely located expert system and the air monitoring system is encrypted.

180. (New) The apparatus as defined in claim 36, wherein the communications between the expert system and the air monitoring system occurs on a communications link between the expert system and the air monitoring system, the communication link including a data communication network that is adapted to handle communications between two or more other devices in addition to the communications between the expert system and the air monitoring system.

181. (New) Apparatus for monitoring indoor locations, comprising:

an air monitoring system having at least one sensor for acquiring air quality parameter data at at least one selected indoor location; and

a computer comprising an expert system for analyzing the acquired air quality parameter data and reaching a conclusion regarding air quality of the selected indoor location, the expert system using at least a case-based method to process the air quality parameter data.

182. (New) Apparatus as defined in claim 181, wherein the computer comprising the expert system is remotely located from said air monitoring system with communications between the expert system and the air monitoring system that at least includes information related to the air quality parameter data acquired by the air monitoring system.

183. (New) Apparatus as defined in claim 182, wherein at least a portion of the communications between the remotely located expert system and the air monitoring system is encrypted.

184. (New) Apparatus as defined in claim 182, wherein the communications between the expert system and the air monitoring system occurs on a communications link between the expert system and the air monitoring system, the communication link including a data communication network that is adapted to handle communications between two or more other devices in addition to the communications between the expert system and the air monitoring system.

185. (New) Apparatus as defined in claim 181, wherein said expert system can make a recommendation for improving the air quality of the selected indoor location.

186. (New) Apparatus as defined in claim 181, wherein the expert system operates at least on user supplied information about the building location.

187. (New) Apparatus as defined in claim 181, wherein the expert system operates at least on historical indoor air quality data in addition to current indoor air quality data from the building location.

188. (New) Apparatus as defined in claim 181, further comprising:

a source of environmental data representative of the outside of a building in which at least one indoor location is being monitored;

wherein the expert system is adapted to provide an air quality analysis based at least in part on the acquired air quality parameter data and the environmental data.

189. (New) Apparatus as defined in claim 181, wherein expert system is used at least in part to detect tampered or faulty data.

190. (New) Apparatus as defined in claim 181, wherein said air monitoring system has at least a carbon dioxide sensor, a particle sensor, and a humidity sensor.

191. (New) Apparatus as defined in claim 181, wherein said air monitoring system has at least a carbon dioxide sensor and a TVOC sensor.

192. (New) Apparatus for monitoring indoor locations, comprising:

an air monitoring system having at least one sensor for acquiring air quality parameter data at at least one selected indoor location; and

a computer comprising an expert system for analyzing the acquired air quality parameter data and reaching a conclusion regarding air quality of the selected indoor location, the expert system using at least a pattern recognition method using fuzzy reasoning over patterns to process the air quality parameter data.

193. (New) Apparatus as defined in claim 192, wherein the computer comprising the expert system is remotely located from said air monitoring system with communications between the expert system and the air monitoring system that at least includes information related to the air quality parameter data acquired by the air monitoring system.

194. (New) Apparatus as defined in claim 193, wherein at least a portion of the communications between the remotely located expert system and the air monitoring system is encrypted.

195. (New) Apparatus as defined in claim 193, wherein the communications between the expert system and the air monitoring system occurs on a communications link between the expert system and the air monitoring system, the communication link including a data communication network that is adapted to handle communications between two or more other devices in addition to the communications between the expert system and the air monitoring system.

196. (New) Apparatus as defined in claim 192, wherein said expert system can make a recommendation for improving the air quality of the selected indoor location.

197. (New) Apparatus as defined in claim 192, wherein the expert system operates at least on user supplied information about the building location.

198. (New) Apparatus as defined in claim 192, wherein the expert system operates at least on historical indoor air quality data in addition to current indoor air quality data from the building location.

199. (New) Apparatus as defined in claim 192, further comprising:

a source of environmental data representative of the outside of a building in which at least one indoor location is being monitored;

wherein the expert system is adapted to provide an air quality analysis based at least in part on the acquired air quality parameter data and the environmental data.

200. (New) Apparatus as defined in claim 192, wherein expert system is used at least in part to detect tampered or faulty data.

201. (New) Apparatus as defined in claim 192, wherein said air monitoring system has at least a carbon dioxide sensor, a particle sensor, and a humidity sensor.

202. (New) Apparatus as defined in claim 192, wherein said air monitoring system has at least a carbon dioxide sensor and a TVOC sensor.

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203. (New) The apparatus as defined in claim 72, wherein the communications between the control unit and the air quality sensor and grab sample unit occurs on a communications link between the control unit and the air quality sensor and grab sample unit, the communication link including a data communication network that is adapted to handle communications between two or more other devices in addition to the communications between the control unit and the air quality sensor and grab sample unit.